

8 (b) modifying the HR file and proxy file by inserting in a header of each video frame of
9 the HR file and proxy file the corresponding compressed timecode packet, while maintaining the
10 files' original frame presentation timing;

11 (c) automatically verifying the timecodes in the HR file and proxy file timecode packets;
12 and

A2 13 (d) if the proxy file starting video frame being offset from the HR file starting video
14 frame, automatically synchronizing the proxy file and the HR file absolute timecodes and
15 relative timecodes in the timecode packets,

16 thereby preserving the MPEG compliance and compressed audio/video data of the HR file
17 and proxy file.

1 32. **(New Claim)** The method according to claim 31, wherein the step (d) further comprising:

2 a step for inserting a synchronization metadata into the proxy file, for signaling an offset
3 and disparity in duration of the proxy file and HR file, a timecode repair action taken, and a
4 timecode type identifying a source of the absolute timecode as chosen from a group comprising
5 an original source timecode, repaired timecode, elapsed timecode or house timecode, and

6 a step for marking affected frames of the proxy file as unviewable, when no
7 corresponding frame found in the HR file.

1 33. **(New Claim)** The method according to claim 31, wherein the step (d) comprising: a step
2 for aligning the HR file video frames and proxy file video frames using absolute timecodes, and
3 a step for updating the relative timecodes in the proxy file timecode packets with the relative
4 timecodes of the HR file.

1 34. **(New Claim)** The method according to claim 33, wherein in the aligning step of step (d),
2 if the proxy file having accurate absolute timecodes, aligning the absolute timecodes of the HR
3 file and proxy file, and if not, using closed captioning for aligning the proxy file and HR file, and
4 copying the absolute timecodes from the HR file into the proxy file timecode packets.

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1 35. **(New Claim)** The method according to claim 34, wherein the closed captioning step, if
2 the HR file and proxy file not being closed captioned, further comprising a step, at the start of the
3 aligning step, for inserting into a predetermined number of video frames of the HR file and proxy
4 file a closed caption data stream for locating and aligning an identical video frame in the HR file
5 and proxy file, and, after the file aligning step, a step for removing the inserted closed caption
6 data stream from the HR file and proxy file.

1 36. **(New Claim)** A method of processing a previously encoded MPEG video high-resolution
2 (HR) file and corresponding proxy file, for frame accurate timecode repair and synchronization
3 of individual video frames of the HR file and proxy file, comprising the following steps:

4 (a) for each video frame of the HR file and proxy file, creating a compressed timecode
5 packet having an identifying signature, an absolute timecode of the frame, a relative timecode of
6 the frame, a picture type and a picture reference, wherein the timecodes having the SMPTE
7 timecode format HH:MM:SS:FF;

8 (b) modifying the HR file and proxy file by inserting in a header of each video frame of
9 the HR file and proxy file the corresponding compressed timecode packet, while maintaining the
10 files' original frame presentation timing;

11 (c) automatically verifying the timecodes in the HR file and proxy file timecode packets;
12 and

13 (d) if needing a repair of the HR file anomalous absolute timecodes, automatically
14 correcting the anomalous absolute timecodes in the HR file timecode packets,
15 thereby preserving the MPEG compliance and compressed audio/video data of the HR
16 file and proxy file.

1 37. **(New Claim)** The method according to claim 36, wherein the step (d) further
2 comprising a step for updating the absolute timecodes in the proxy file timecode packets.

1 38. **(New Claim)** The method according to claim 36, wherein the step (d) further comprising
2 a step for updating absolute timecodes of each storyboard thumbnail for enabling frame-accurate
3 composition of an edit decision list (EDL).

1 39. **(New Claim)** A system for processing a previously encoded MPEG video high-resolution
2 (HR) file and corresponding proxy file, for frame accurate timecode repair and synchronization
3 of individual video frames of the HR file and proxy file, comprising:

4 a computer coupled to an electronic storage device for storing the MPEG video files;
5 programming means, performed by the computer, for creating for each video frame of the
6 HR file and proxy file, a compressed timecode packet having an identifying signature, an
7 absolute timecode of the frame, a relative timecode of the frame, a picture type and a picture
8 reference, wherein the timecodes having the SMPTE timecode format HH:MM:SS:FF;
9 programming means, performed by the computer, for modifying the HR file and proxy
10 file by inserting in a header of each video frame of the HR file and proxy file the corresponding
11 compressed timecode packet, while maintaining the files' original frame presentation timing;
12 programming means, performed by the computer, for automatically verifying the
13 timecodes in the HR file and proxy file timecode packets; and
14 programming means, performed by the computer, for automatically synchronizing the
15 proxy file and the HR file absolute timecodes and relative timecodes in the timecode packets,
16 thereby preserving the MPEG compliance and compressed audio/video data of the MPEG video
17 file.

1 40. **(New Claim)** The system according to claim 39, wherein the means for automatically
2 synchronizing the proxy file and the HR file absolute timecodes and relative timecodes in the
3 timecode packets further comprising:

4 means for inserting a synchronization metadata into the proxy file, for signaling an offset
5 and disparity in duration of the proxy file and HR file, a timecode repair action taken, and a
6 timecode type identifying a source of the absolute timecode as chosen from a group comprising
7 an original source timecode, repaired timecode, elapsed timecode or house timecode, and

8 means for marking affected frames of the proxy file as unviewable, when no
9 corresponding frame found in the HR file.

1 41. **(New Claim)** The system according to claim 39, wherein the means for automatically
2 synchronizing the proxy file and the HR file absolute timecodes and relative timecodes in the
3 timecode packets comprising: means for aligning the HR file video frames and proxy file video
4 frames using absolute timecodes, and means for updating the relative timecodes in the proxy file
5 timecode packets with the relative timecodes of the HR file.

1 42. **(New Claim)** The system according to claim 41, wherein the means for automatically
2 synchronizing the proxy file and the HR file absolute timecodes and relative timecodes in the
3 timecode packets comprising: means for aligning the absolute timecodes of the HR file and
4 proxy file, and closed captioning means for aligning the proxy file and HR file and copying the
5 absolute timecodes from the HR file into the proxy file timecode packets.

1 43. **(New Claim)** The system according to claim 42, wherein the closed captioning means
2 further comprising: means for inserting into a predetermined number of video frames of the HR
3 file and proxy file a closed caption data stream for locating and aligning an identical video frame
4 in the HR file and proxy file, and means for removing the inserted closed caption data stream
5 from the HR file and proxy file after the alignment.

1 44. **(New Claim)** A system for processing a previously encoded MPEG video high-resolution
2 (HR) file and corresponding proxy file, for frame accurate timecode repair and synchronization
3 of individual video frames of the HR file and proxy file, comprising:

4 a computer coupled to an electronic storage device for storing the MPEG video files;
5 programming means, performed by the computer, for creating for each video frame of the
6 HR file and proxy file, a compressed timecode packet having an identifying signature, an
7 absolute timecode of the frame, a relative timecode of the frame, a picture type and a picture
8 reference, wherein the timecodes having the SMPTE timecode format HH:MM:SS:FF;

9 programming means, performed by the computer, for modifying the HR file and proxy
10 file by inserting in a header of each video frame of the HR file and proxy file the corresponding
11 compressed timecode packet, while maintaining the files' original frame presentation timing;

12 programming means, performed by the computer, for automatically verifying the
13 timecodes in the HR file and proxy file timecode packets; and

14 programming means, performed by the computer, for automatically correcting the
15 anomalous absolute timecodes in the HR file timecode packets,

16 thereby preserving the MPEG compliance and compressed audio/video data of the MPEG
17 video file.

1 45. **(New Claim)** The system according to claim 44, wherein the means for automatically
2 correcting the anomalous absolute timecodes in the HR file timecode packets further
3 comprising means for updating the absolute timecodes in the proxy file timecode packets.

1 46. **(New Claim)** The system according to claim 44, wherein the means for automatically
2 correcting the anomalous absolute timecodes in the HR file timecode packets further comprising
3 means for updating absolute timecodes of each storyboard thumbnail for enabling frame-accurate
4 composition of an edit decision list (EDL).

1 47. **(New Claim)** A program storage device readable by a computer tangibly embodying a
2 program of instructions executable by the computer to perform method steps of processing a
3 previously encoded MPEG video high-resolution (HR) file and corresponding proxy file, for
4 frame accurate timecode repair and synchronization of individual video frames of the HR file
5 and proxy file, the MPEG video files stored in an electronic storage device coupled to the
6 computer, the method comprising the following steps:

7 (a) for each video frame of the HR file and proxy file, creating a compressed timecode
8 packet having an identifying signature, an absolute timecode of the frame, a relative timecode of
9 the frame, a picture type and a picture reference, wherein the timecodes having the SMPTE
10 timecode format HH:MM:SS:FF;

11 (b) modifying the HR file and proxy file by inserting in a header of each video frame of
12 the HR file and proxy file the corresponding compressed timecode packet, while maintaining the
13 files' original frame presentation timing;

14 (c) automatically verifying the timecodes in the HR file and proxy file timecode packets;
15 and

16 (d) if the proxy file starting video frame being offset from the HR file starting video
17 frame, automatically synchronizing the proxy file and the HR file absolute timecodes and
18 relative timecodes in the timecode packets,

19 thereby preserving the MPEG compliance and compressed audio/video data of the HR file
20 and proxy file.

1 48. **(New Claim)** The method according to claim 47, wherein the step (d) further comprising:
2 a step for inserting a synchronization metadata into the proxy file, for signaling an offset
3 and disparity in duration of the proxy file and HR file, a timecode repair action taken, and a
4 timecode type identifying a source of the absolute timecode as chosen from a group comprising
5 an original source timecode, repaired timecode, elapsed timecode or house timecode, and
6 a step for marking affected frames of the proxy file as unviewable, when no
7 corresponding frame found in the HR file.

1 49. **(New Claim)** The method according to claim 47, wherein the step (d) comprising: a step
2 for aligning the HR file video frames and proxy file video frames using absolute timecodes, and
3 a step for updating the relative timecodes in the proxy file timecode packets with the relative
4 timecodes of the HR file.

1 50. **(New Claim)** The method according to claim 49, wherein in the aligning step of step (d),
2 if the proxy file having accurate absolute timecodes, aligning the absolute timecodes of the HR
3 file and proxy file, and if not, using closed captioning for aligning the proxy file and HR file, and
4 copying the absolute timecodes from the HR file into the proxy file timecode packets.

1 51. **(New Claim)** The method according to claim 50, wherein the closed captioning step, if
2 the HR file and proxy file not being closed captioned, further comprising a step, at the start of the
3 aligning step, for inserting into a predetermined number of video frames of the HR file and proxy
4 file a closed caption data stream for locating and aligning an identical video frame in the HR file
5 and proxy file, and, after the file aligning step, a step for removing the inserted closed caption
6 data stream from the HR file and proxy file.

A² 1 52. **(New Claim)** A program storage device readable by a computer tangibly embodying a
2 program of instructions executable by the computer to perform method steps of processing a
3 previously encoded MPEG video high-resolution (HR) file and corresponding proxy file, for
4 frame accurate timecode repair and synchronization of individual video frames of the HR file
5 and proxy file, the MPEG video files stored in an electronic storage device coupled to the
6 computer, the method comprising the following steps:

7 (a) for each video frame of the HR file and proxy file, creating a compressed timecode
8 packet having an identifying signature, an absolute timecode of the frame, a relative timecode of
9 the frame, a picture type and a picture reference, wherein the timecodes having the SMPTE
10 timecode format HH:MM:SS:FF;

11 (b) modifying the HR file and proxy file by inserting in a header of each video frame of
12 the HR file and proxy file the corresponding compressed timecode packet, while maintaining the
13 files' original frame presentation timing;

14 (c) automatically verifying the timecodes in the HR file and proxy file timecode packets;

15 and

16 (d) if needing a repair of the HR file anomalous absolute timecodes, automatically
17 correcting the anomalous absolute timecodes in the HR file timecode packets,
18 thereby preserving the MPEG compliance and compressed audio/video data of the HR
19 file and proxy file.

1 53. **(New Claim)** The method according to claim 52, wherein the step (d) further
2 comprising a step for updating the absolute timecodes in the proxy file timecode packets.

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1 54. **(New Claim)** The method according to claim 52, wherein the step (d) further comprising
2 a step for updating absolute timecodes of each storyboard thumbnail for enabling frame-accurate
3 composition of an edit decision list (EDL).
